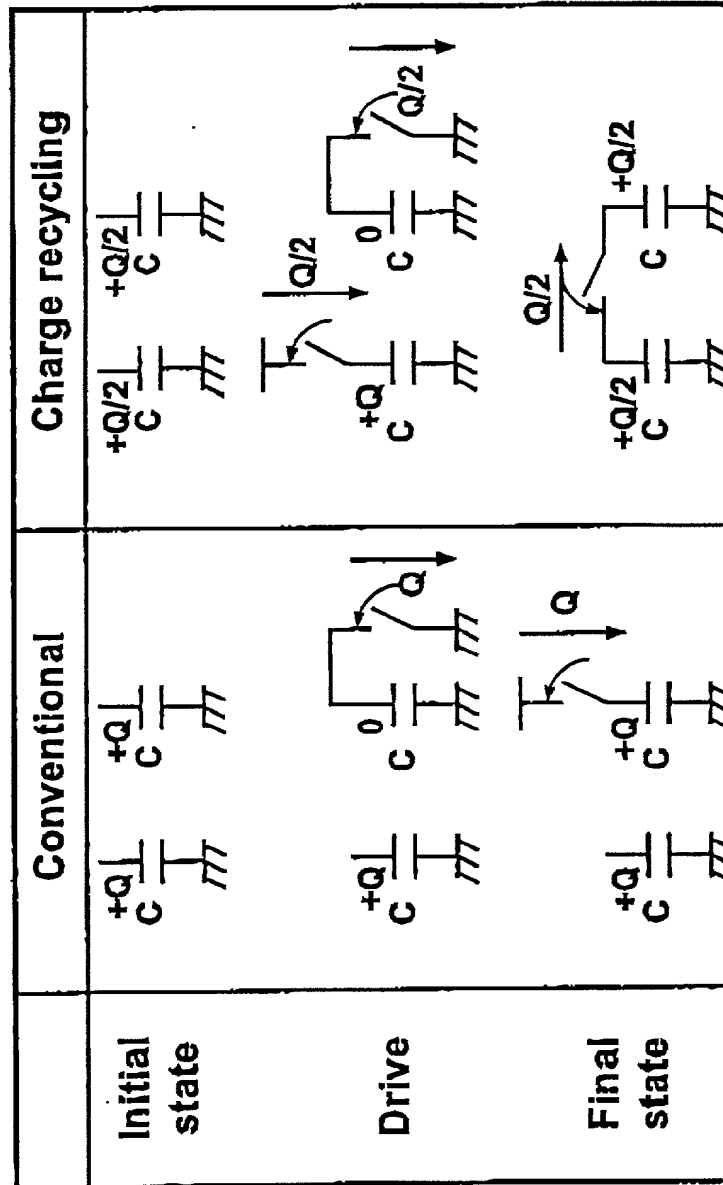


FIG. 1 PRIOR ART

| | Conventional | Low swing signaling |
|---------|----------------------------------|------------------------------------|
| Concept | | |
| Power | $CV_{dd}^2 f$ | $> CV_{dd} V_s f$ |
| Delay | $CV_{dd}/(V_{dd}-V_{th})^\alpha$ | $= CV_{dd}/(V_{dd}-V_{th})^\alpha$ |

FIG. 2 PRIOR ART



$$P_{\text{recycle}} = P_{\text{conv}}/2$$

FIG.3

PRIOR ART

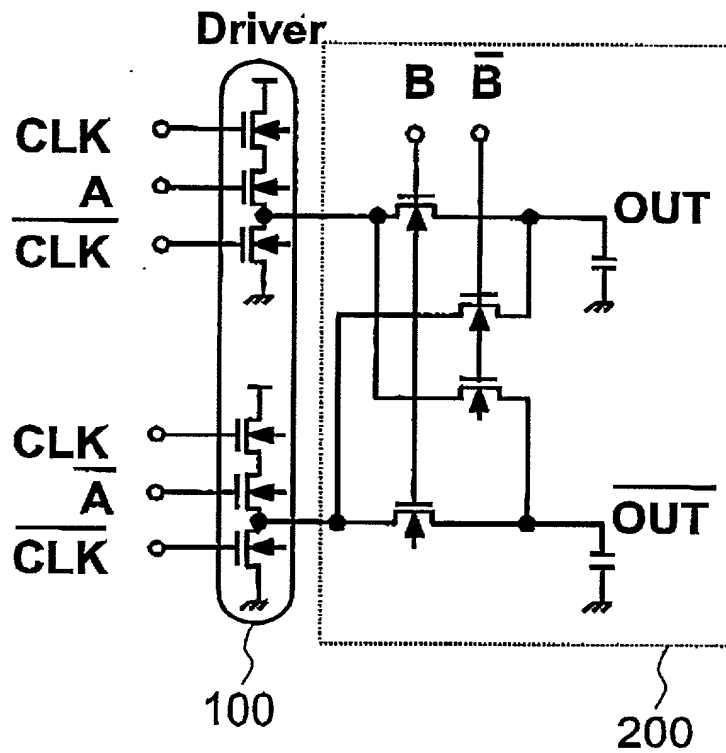


FIG.4

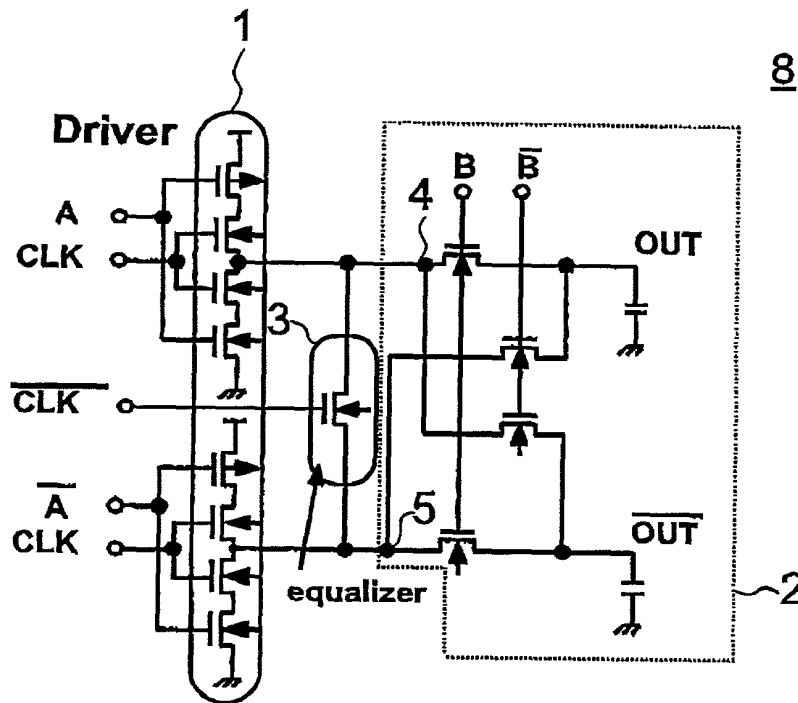


FIG. 5 PRIOR ART

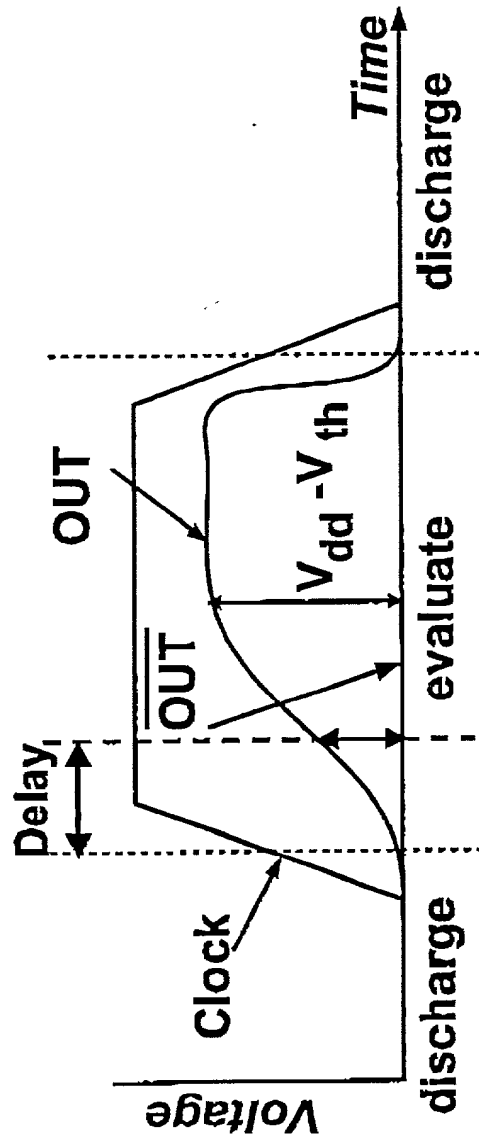


FIG. 6 PRIOR ART

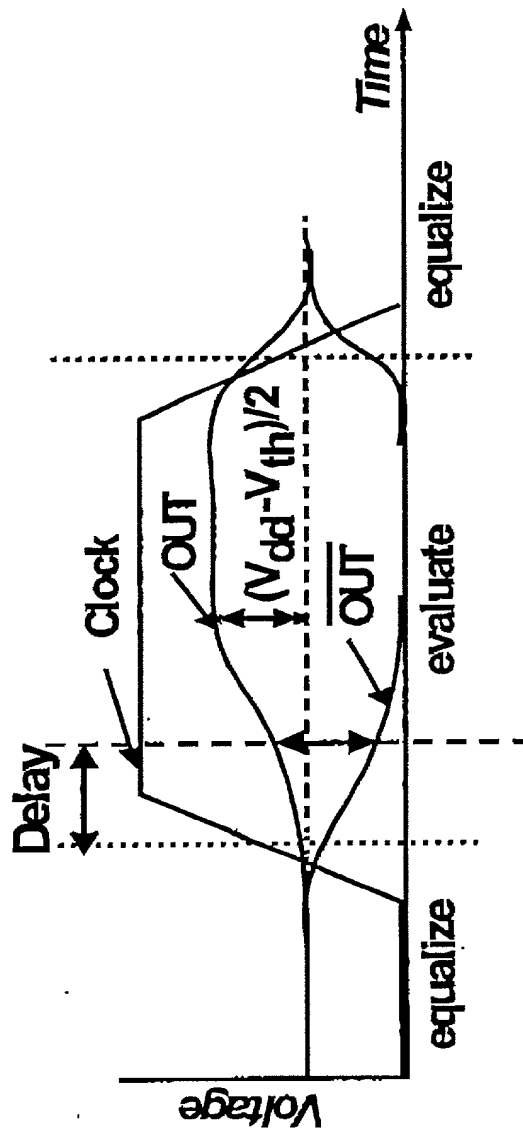


FIG. 7

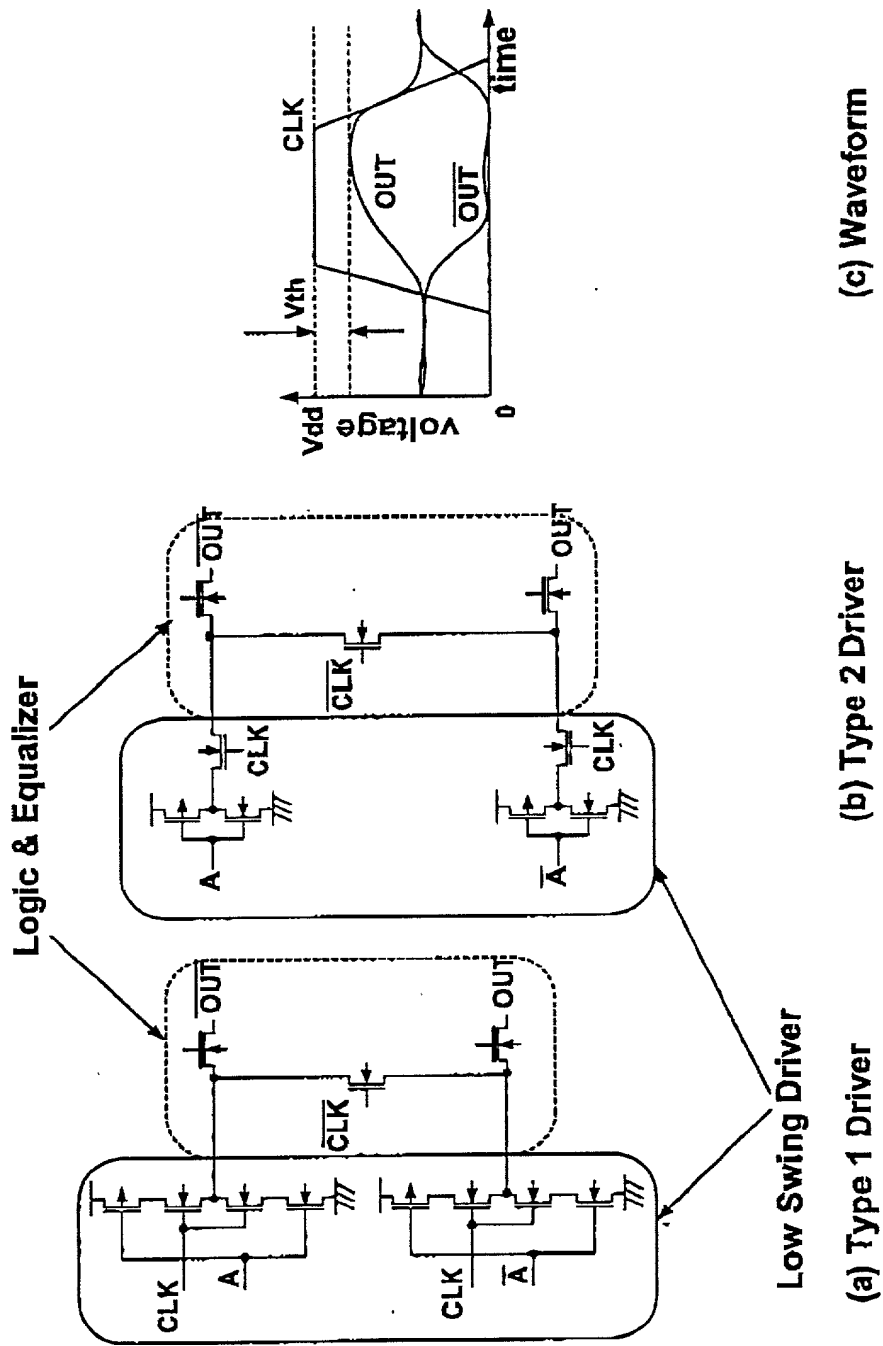


FIG. 8

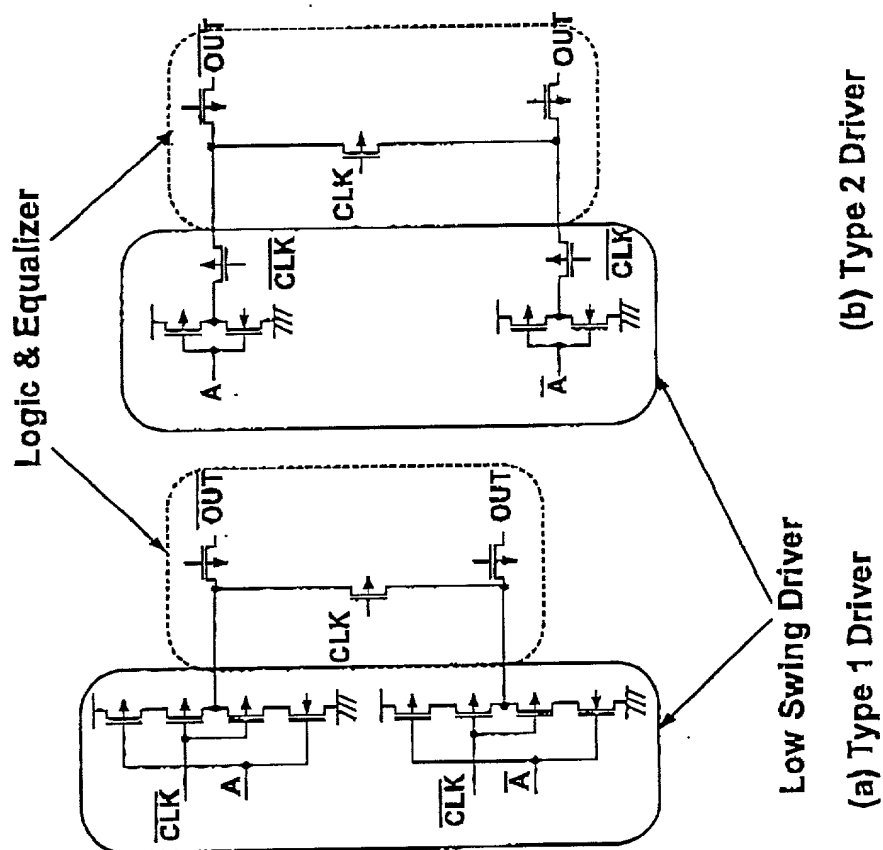


FIG. 9

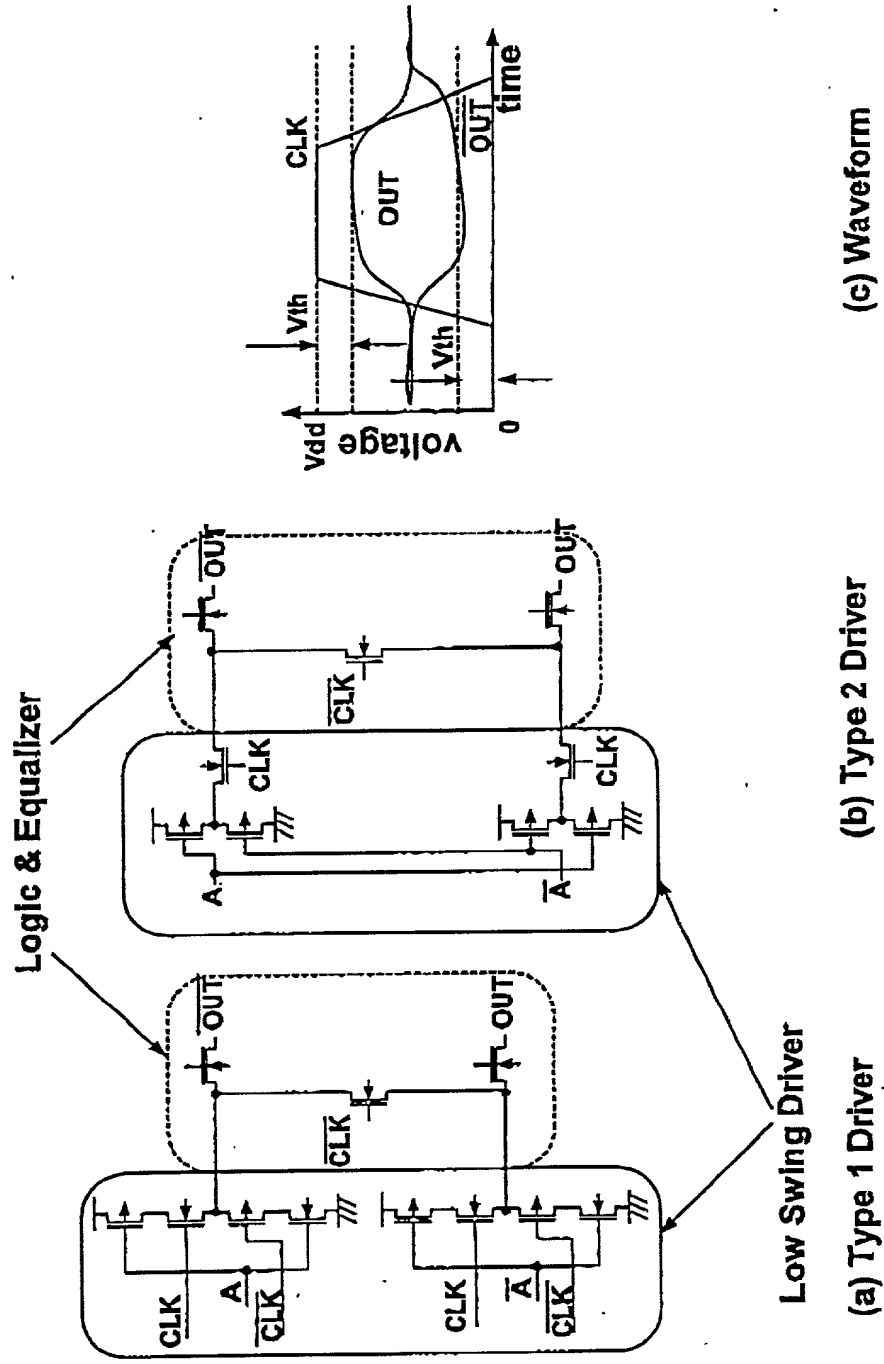


FIG.10

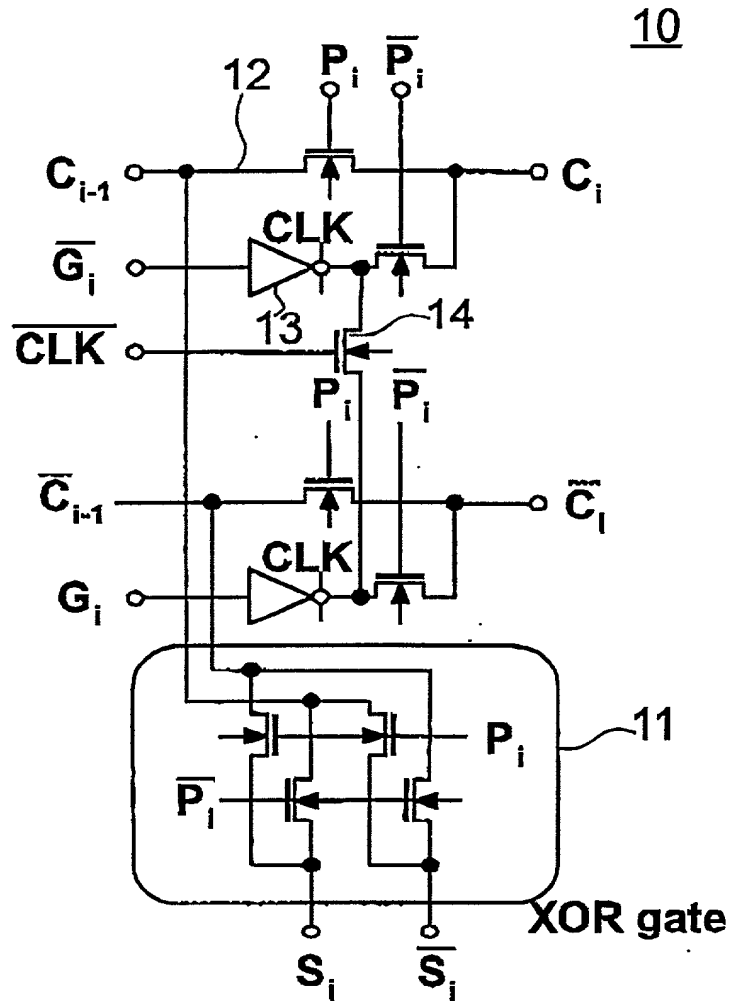


FIG. 12

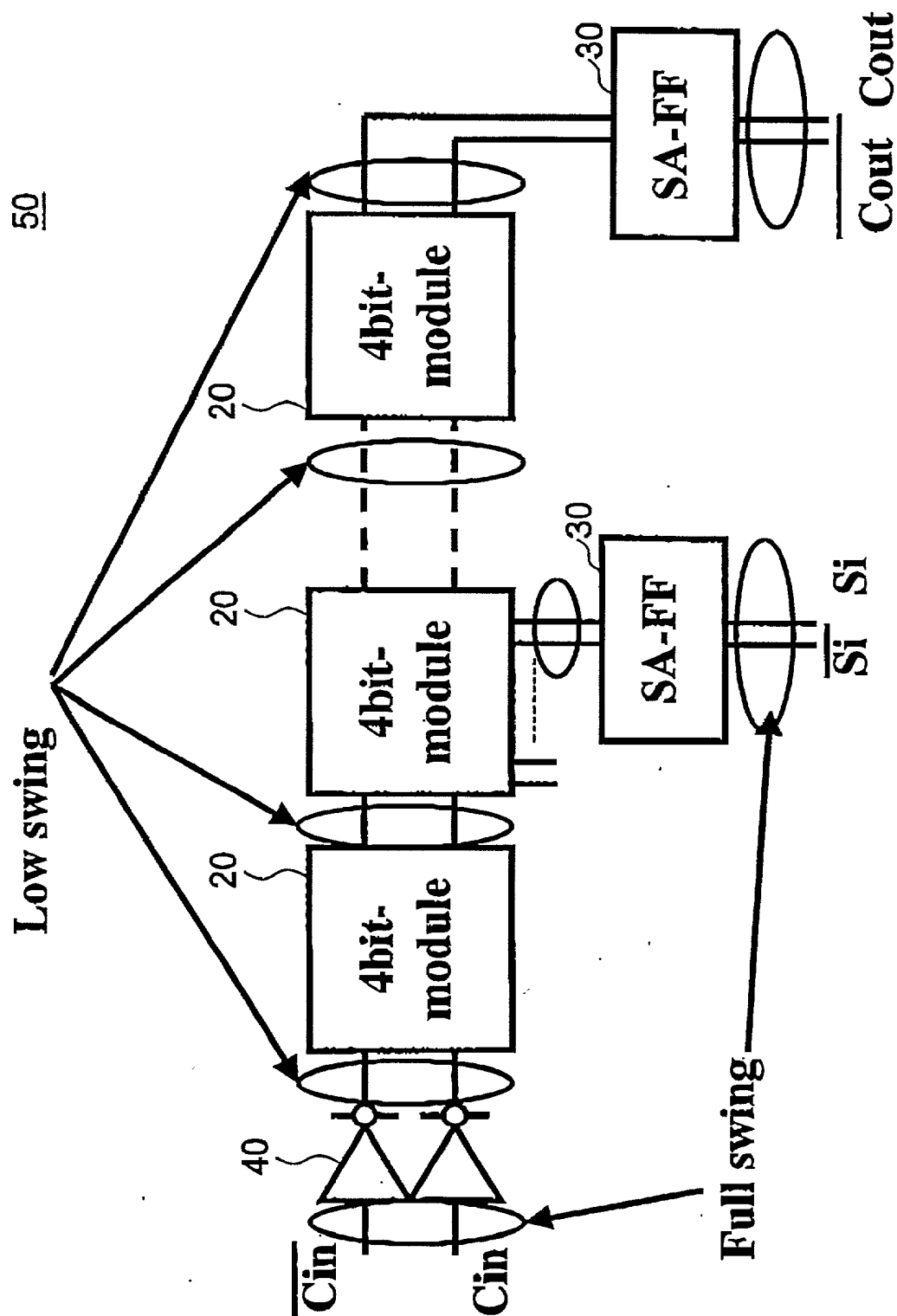


FIG. 13

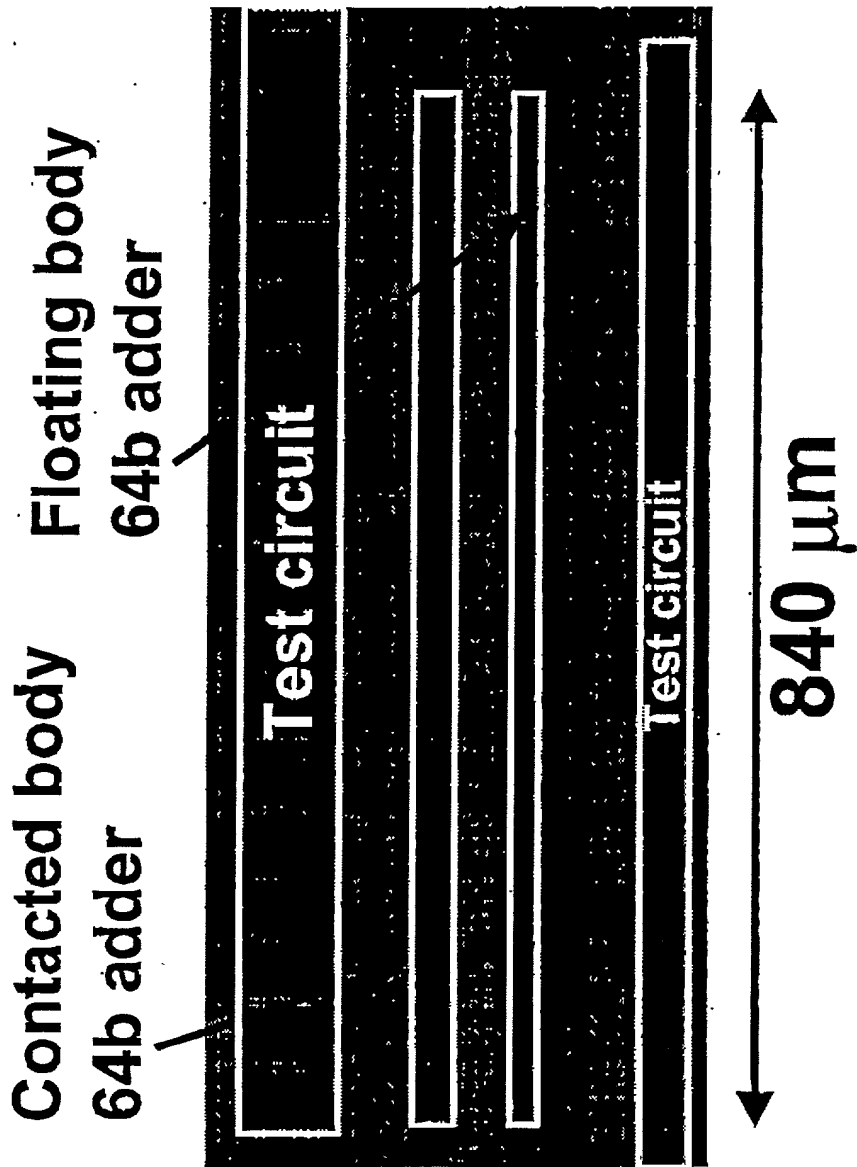


FIG. 14

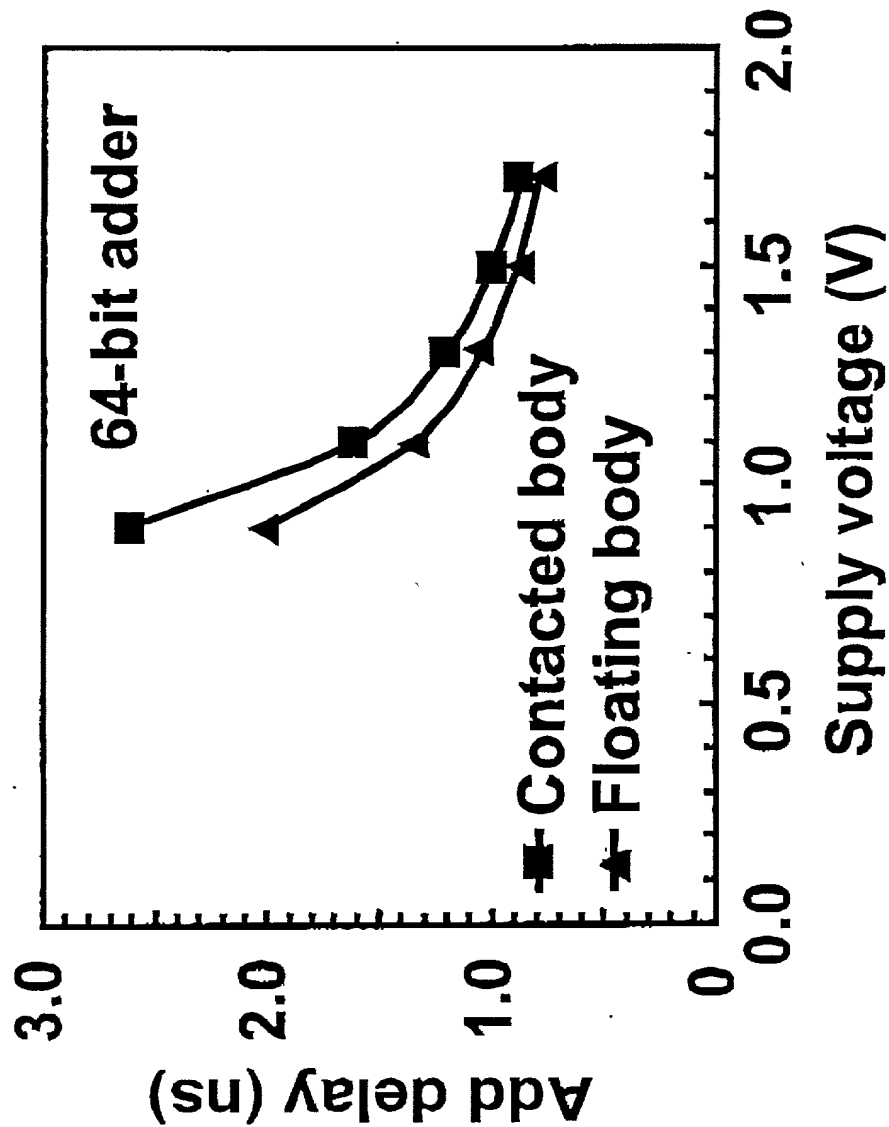


FIG. 16

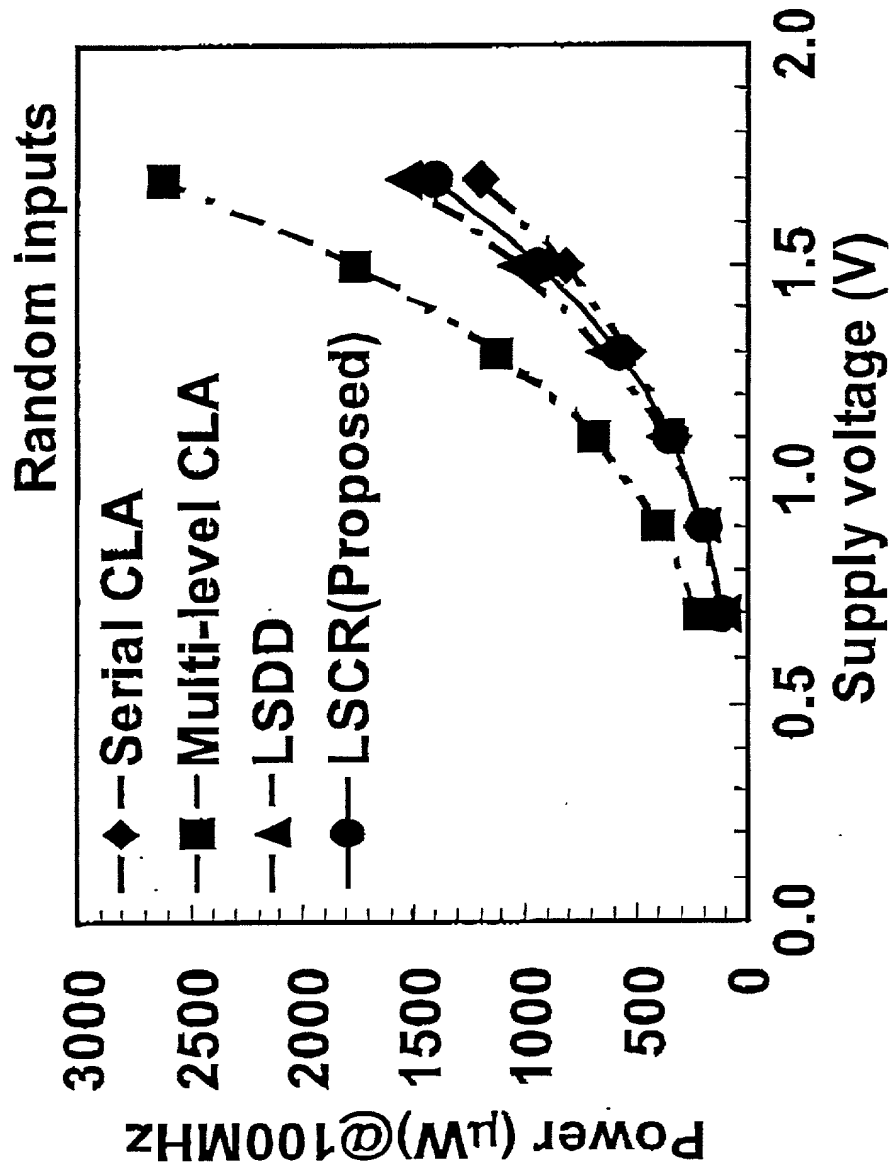


FIG. 17

